

AMENDMENTS TO THE CLAIMS

1. (Currently amended) Utilizing a computer system comprising at least one input device, at least one output device, at least one storage device, and at least one suitably-programmed computer, a method of generating and carrying out an updated surgical plan for application to a an anatomical bone, the method comprising:

(a) generating in at least one suitably-programmed computer a three dimensional (3D) model of the anatomical bone,

wherein the 3D model is based on;

(1) one or more two dimensional (2D) images of the anatomical bone, the said 2D images being input into the computer system by means of at least one input device, and

(2) a 3D bone template, chosen from a set of 3D bone templates stored in at least one storage device, to which a free form deformation is applied,

wherein the 3D model is generated in the at least one suitably-programmed computer by successively comparing at least one 2D anatomical bone image with at least one view of the 3D bone template, computing an associated error, and optimizing 3D bone template free form deformation parameters to minimize said error,

(b) based on the 3D model, generating in at least one suitably-programmed computer a surgical plan including:

(1) one or more locations on the anatomical bone upon which to dispose one or more fixators, and

(2) one or more settings of one or more struts of the one or more fixators,

(c) outputting the surgical plan by means of at least one output device;

(d) based on the surgical plan, disposing the one or more fixators on the anatomical bone,

(e) based on data associated with the placement of the one or more fixators disposed on the anatomical bone, the said data being input into the computer system by

means of at least one input device, generating in at least one suitably-programmed computer an updated surgical plan including updated settings for one or more of the one or more struts;

(f) outputting the updated surgical plan by means of at least one output device;
and

(g) based on the updated surgical plan, adjusting at least one setting of a strut of at least one fixator.

2. (Canceled)

3. (Withdrawn) The method of claim 1, wherein the one or more locations include one or more locations for one or more of an osteotomy and a coricotomy.

4. (Previously presented) The method of claim 1, wherein the one or more locations on the bone upon which to dispose the one or more fixators include one or more locations on the bone upon which to dispose one or more pins for receiving the one or more fixators.

5. (Previously presented) The method of claim 1, wherein the one or more settings of the one or more struts include one or more periodic adjustments of the one or more struts.

6. (Previously presented) The method of claim 1, wherein the surgical plan further includes one or more surgical tools for disposing the one or more fixators on the bone.

7. (Previously presented) The method of claim 1, wherein the data associated with the placement of the one or more fixators disposed on the bone include one or more images of the one or more fixators disposed on the bone.

8. (Previously presented) The method of claim 7, wherein the one or more images include one or more 2D images.

9. (Previously presented) The method of claim 8, wherein two or more 2D images are orthogonal to each other.

10. (Previously presented) The method of claim 8, wherein the one or more 2D images include X-ray images.

11. (Previously presented) The method of claim 1, further comprising:
associating the surgical plan with one or more bone contours based on the 3D model of the bone,
storing the surgical plan, and
generating a new surgical plan based on the stored surgical plan.

12. (Previously presented) The method of claim 11, wherein generating a new surgical plan includes:
determining whether the new surgical plan is related to the stored surgical plan,
and

based on whether the new surgical plan is related to the stored surgical plan, generating the new surgical plan based on the stored surgical plan.

13. (Previously presented) The method of claim 12, wherein the new surgical plan is associated with one or more new bone contours based on a 3D model of a new bone, and wherein determining includes:

determining whether the stored surgical plan is associated with one or more bone contours that are similar to one or more of the one or more new bone contours associated with the new surgical plan.

14. (Previously presented) The method of claim 1, wherein generating a surgical plan includes:

generating a simulation of the surgical plan.

15. (Previously presented) The method of claim 14, wherein the simulation includes one or more 3D images based on the surgical plan.

16. (Previously presented) The method of claim 14, wherein the simulation includes animated images based on the surgical plan.

17. (Withdrawn) The method of claim 1, wherein generating a surgical plan includes:

receiving at a server images of the bone from a client,
generating the surgical plan at the server, and
providing the surgical plan from the server to the client.

18. (Withdrawn) The method of claim 17, wherein generating the updated surgical plan includes:

receiving at the server the data associated with the placement of the one or more fixators disposed on the bone from the client,

generating the updated plan at the server, and

providing the updated surgical plan from the server to the client.

19. (Withdrawn) The method of claim 17, wherein the data includes one or more 2D images of the one or more fixators disposed on the bone.

20. (Withdrawn) The method of claim 17, wherein providing the surgical plan from the client to the server includes:

charging a fee to provide the surgical plan from the client to the server, and

based on payment of the fee, providing the surgical plan from the client to the server.

21. (New) The method of claim 1, wherein the free-form deformation parameters are determined using adaptive refinement of a control block.